

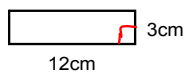
Ch 11 Area

11.1 Area of Parallelograms

11.2 Area of Triangles, Trapezoids,
and RhombiArea of a rectangle = bh Area of a square = s^2 Area of a parallelogram = bh 

Base and height are perpendicular

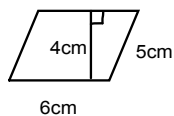
Example 1



$$A = 12 \cdot 3$$

$$36 \text{ cm}^2$$

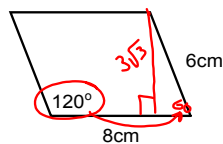
Example 2



$$A = 6 \cdot 4$$

$$24 \text{ cm}^2$$

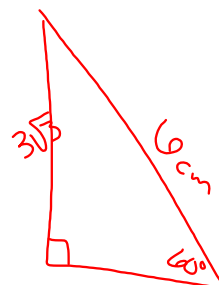
Example 3



30	60	90
X	X\sqrt{3}	2x
3	3\sqrt{3}	6

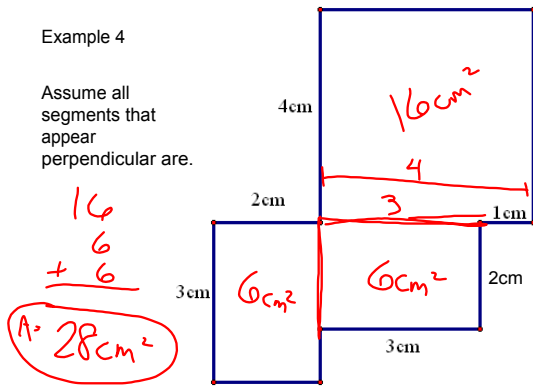
$$A = 8 \cdot 3\sqrt{3}$$

$$24\sqrt{3} \text{ cm}^2$$



Example 4

Assume all segments that appear perpendicular are.



Example 5

A (-2, 3)

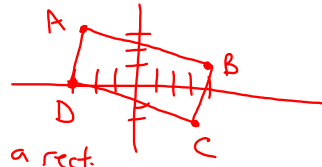
B (4, 1)

C (3, -2)

D (-3, 0)

What shape is it?

Find the area.



Verify it is a rect.

$$\overline{AB} \text{ } m = \frac{3-1}{-2-4} = \frac{2}{-6} = -\frac{1}{3} \quad \overline{AD} \text{ } m = \frac{3-0}{-2-(-3)} = \frac{3}{1} = 3 \quad 4R + \angle s \text{ Rect.}$$

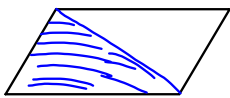
$$\overline{DC} \text{ } m = \frac{0-(-2)}{-3-3} = \frac{2}{-6} = -\frac{1}{3} \quad \overline{BC} \text{ } m = \frac{1-(-2)}{4-3} = \frac{3}{1} = 3$$

$$AB = \sqrt{(-6)^2 + (2)^2} = \sqrt{40} = 2\sqrt{10}$$

$$AD = \sqrt{1^2 + 3^2} = \sqrt{10}$$

$$A = 2\sqrt{10} \cdot \sqrt{10}$$

$$A = 20\text{u}^2$$



$$A = \frac{1}{2}bh$$

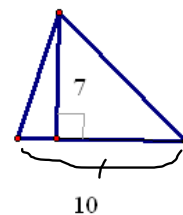
Area of a Triangle = $\frac{1}{2}bh$

What is the area of this shape?
Cut it in half.

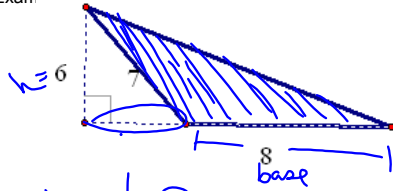
Example 1

$$A = \frac{1}{2} 10 \cdot 7$$

$$= 35\text{u}^2$$



Exam



$$A = \frac{1}{2} \cdot 8 \cdot 6$$

$$24 \text{ u}^2$$

*

Example 3

What is the length of AB?

Area $\triangle ABC$

$$A = \frac{1}{2} \cdot 15 \cdot 4$$

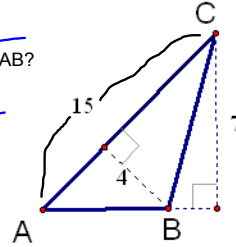
$$A = 30 \text{ u}^2$$

$$A = \frac{1}{2} b h$$

$$30 = \frac{1}{2} b \cdot 7$$

$$30 = 3.5 b$$

$$b = 8.6 \text{ u}$$



Example 4

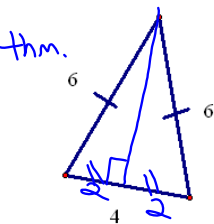
Find h w/ pyth. thm.

$$6^2 = h^2 + 2^2$$

36

$$32 = h^2$$

$$4\sqrt{2} = h$$



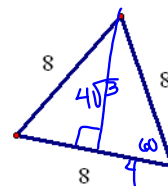
$$A = \frac{1}{2} \cdot 4 \cdot 4\sqrt{2}$$

$$8\sqrt{2} \text{ u}^2$$

Example 5

$$A = \frac{1}{2} \cdot 8 \cdot 4\sqrt{3}$$

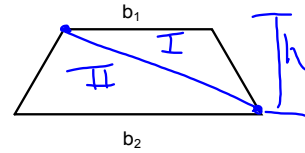
$$= 16\sqrt{3} \text{ u}^2$$



$$\text{Area of an Equilateral Triangle} = \frac{s^2 \sqrt{3}}{4}$$

$$\frac{8^2 \sqrt{3}}{4}$$

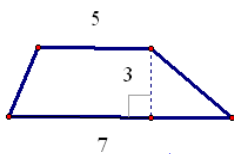
$$16\sqrt{3}u^2$$



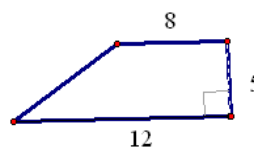
$$A_I + A_{II}$$

$$\frac{1}{2}b_1h + \frac{1}{2}b_2h$$

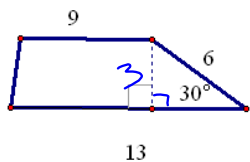
$$A = \frac{1}{2}h(b_1 + b_2)$$



$$\begin{aligned} A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}3(7 + 5) \\ &= \frac{1}{2} \cdot 3 \cdot 12 \\ &= 18u^2 \end{aligned}$$



$$\begin{aligned} A &= \frac{1}{2}5(8 + 12) \\ A &= 50u^2 \end{aligned}$$

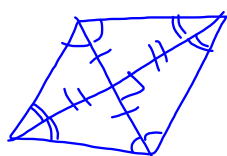


$$\begin{array}{r|rr} 30 & 60 & 90 \\ \hline 3 & 3\sqrt{3} & 6 \end{array}$$

$$A = \frac{1}{2} 3(9+13) \\ = 33u^2$$

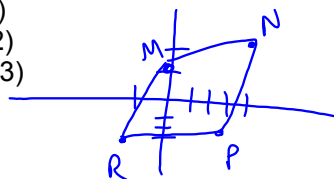
R(4, 2)
S(6, -1)
T(-2, -1)
U(-1, 2)

Area of a Rhombus = $\frac{1}{2} d_1 \cdot d_2$



diagonals

M(0, 1) MNPR is a rhombus
N(4, 2)
P(3, -2)
R(-1, -3)

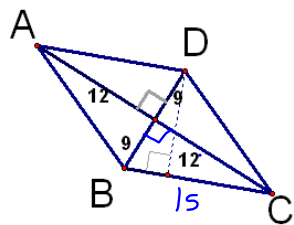


$$A = \frac{1}{2} d_1 \times d_2$$

$$MP = 3\sqrt{2}$$

$$RN = 5\sqrt{2}$$

$$\frac{1}{2} 3\sqrt{2} \cdot 5\sqrt{2} \\ \frac{1}{2} 15 \cdot 2 \\ \boxed{15u^2}$$



What is the area of the rhombus?

$$A = \frac{1}{2} \cdot 24 \cdot 18$$

$$A = 216 \text{ u}^2$$

What is the height of the rhombus?

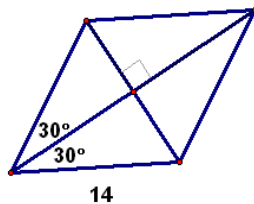
$$A = bh$$

$$216 = 15 \cdot h$$

$$14.4 = h$$

$$9^2 + 12^2 = BC^2$$

$$15 = BC$$



What is the area of the rhombus?

HW

p598 9-19odd

p606 13-21odd, 18, 25, 27,
30, 32